

Application No. 10/713,772
 Amendment dated February 4, 2008
 Reply to Final Office Action of November 7, 2007

Docket No. 09496/0200199-US0

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A blood purification device comprising:
 a blood circuit having an arterial blood circuit and a venous blood circuit;
 a blood pump disposed in said arterial blood circuit;
 a blood purifier connected to the blood circuit between said arterial blood circuit and said venous blood circuit, and configured to purify blood flowing in said blood circuit;

a first measuring unit disposed in said arterial blood circuit and configured to measure a first hematocrit value Hta ~~blood concentration~~ of said arterial blood circuit;

a second measuring unit disposed in said venous blood circuit and configured to measure a second hematocrit value Htv ~~blood concentration~~ of said venous blood circuit;

a calculating unit to first obtain a measured ratio value and a theoretical ratio value and then compare said measured ratio value to said theoretic ratio value to obtain an evaluation value which can be used to evaluate operation of the blood purification device ; wherein the first measured hematocrit value Hta is divided by the second hematocrit value Htv to obtain the measured ratio value Hta/Htv; and a preset blood flow rate Qb is divided by a preset water removal rate Quf to obtain the theoretical ratio value Qb/Quf configured to calculate a first measurement value and a first theoretical value; said first measurement value referring to a ratio of said blood concentrations measured by said first measuring unit and said second measuring unit, and said first theoretical value referring to a blood concentration ratio obtained by at least one formula based on parameters including a preset blood flow rate of said blood pump and a preset blood purifying rate of said blood purifier;

an evaluation unit coupled configured to evaluate whether the evaluation value a difference between said first measurement value and said first theoretical value is larger than a first predetermined acceptable ratio difference; and

a reporting unit configured to report a trouble condition for at least one of said blood pump and said blood purifier when the evaluation value ~~difference between said first measurement value and said first theoretical value~~ is larger than the a predetermined value ~~-acceptable ratio difference~~.

2. (Previously Presented) The blood purification device of claim 1, wherein:
said blood purifier includes a water removing unit connected to said blood purifier and configured to remove water from blood flowing in said blood purifier; and
said preset blood purifying rate is a preset water removal rate of said water removing unit.

3. (Currently Amended) The blood purification device of claim 2, further comprising:

a substitution fluid supplying unit configured to supply a substitution fluid into said blood circuit, wherein

said calculating unit configured to calculate a theoretical ratio value ~~referring to a ratio of the blood concentrations obtained by the at least one formula~~ is based on parameters including a preset substitution fluid supplying rate of said substitution fluid supplying unit and a filtration rate of said blood purifier in addition to said preset blood flow rate and said preset water removal rate, and

said reporting unit is configured to report a trouble condition for at least one of said blood pump, said blood purifier and said substitution fluid supplying unit.

4 -7. (Canceled)

8. (Currently Amended) The blood purification device of claim 1, wherein:
said blood pump is further configured to adjust the preset blood flow rate to an adjusted blood flow rate;

said ~~evaluation~~ calculating unit is further configured to calculate a second measurement value and a second theoretical value, said second measurement value referring to a ratio of said blood concentrations measured by said first measuring unit and said second measuring unit while said blood pump is operated at said adjusted blood flow rate and said blood purifier is operated at said preset blood purifying rate, and said second theoretical value referring to a blood concentration ratio obtained by at least one formula based on parameters including said adjusted blood flow rate of said blood pump and said preset blood purifying rate of said blood purifier;

said evaluation unit is further configured to evaluate whether said difference between said second measurement value and said second theoretical value indicates a trouble condition ~~is larger than a second predetermined acceptable ratio difference~~; and

said reporting unit is further configured to report the trouble condition for said blood purifier when said difference between said second measurement value and said second theoretical value is at a first value which is different larger than the second predetermined acceptable ratio difference, and to report the trouble condition for said blood pump when said difference between said second measurement value and second ~~first~~ theoretical value is at a second value which is different ~~not larger~~ than the second predetermined acceptable ratio difference.

9. (Withdrawn) A method for monitoring for a trouble condition associated with a blood purification device, the method comprising the steps of:

disposing a blood pump in an arterial blood circuit of said blood purification device;

connecting a blood purifier between said arterial blood circuit and a venous blood circuit to the blood purification device, said blood purifier being configured to purify blood flowing in said blood circuit;

measuring a blood concentration of said arterial blood circuit;

measuring a blood concentration of said venous blood circuit;

calculating a measurement value and a theoretical value, the measurement value referring to a ratio of said blood concentrations of said arterial blood circuit and said venous blood circuit, and the theoretical value referring to a blood concentration ratio obtained by at least one formula based on parameters including a preset blood flow rate of said blood pump and a preset blood purifying rate of said blood purifier;

evaluating whether a difference between said measurement value and said theoretical value is larger than a predetermined acceptable ratio difference; and

reporting the difference between said measurement value and said theoretical value when that difference is larger than the predetermined acceptable ratio difference, wherein said reporting unit indicates a trouble condition for at least one of said blood pump and said blood purifier.